Remarks on her

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AND SIXTY-FOUR CASES

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ROBERT WILLIAM PA

SURGEON TO THE EAST LONDON HOSPITA

PRESENTED BY THE AUTHOR

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# THE TREATMENT OF NÆVUS BY EXCISION.

WITH A CLINICAL ANALYSIS OF FIVE HUNDRED
AND SIXTY-FOUR CASES OF NÆVUS.

BY

ROBERT WILLIAM PARKER,

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# ON THE
# TREATMENT OF NÆVUS BY EXCISION.

## TO WHICH IS APPENDED A CLINICAL ANALYSIS OF 564 CASES OF NÆVUS; TOGETHER WITH THE MICROSCOPIC NATURE OF THIS CONDITION.

SARAH H., æt. 10 months, was brought to the East London Hospital for Children on May 1, 1885, on account of a large mixed nævus, situate between the scapulæ, over the upper dorsal spinous processes. It was congenital, and had grown continuously since birth; especially during the past two or three weeks growth had been very rapid and the child had seemed uneasy. When first seen by me, the nævus measured 2½ × 2¾ inches; it was more or less circular in outline, considerably elevated above the adjoining surface, rising gradually from the periphery towards the centre. The central cutaneous part was, for the most part, of a bright red colour, about 1¾ inches across, but presented also little islets of white cicatricial tissue, the result of a former treatment by caustics, which had been tried when the child was between two and three months old. The subcutaneous portion formed the chief bulk of the nævus. There was no pulsation; the skin over it was normal in colour.

*Operation.*—An elliptical incision was made, obliquely from above downwards, so as to include the involved cutaneous portion. The skin and subcutaneous tissue were then dissected off on either side, and the nævus fully exposed. Having arrived beyond its edge, it was easily shelled off its deeper attachments, except at one or two points where the nutrient vessels appeared to enter, and around which the nævus seemed to be spreading; the vessels were ligatured and the nævus removed without difficulty, after which the edges of the wound were carefully adjusted with catgut sutures, painted over with iodoformed collodion, and a dry dressing applied.

There was, unfortunately, not much primary union, but the edges of the incision were kept close together with fenestrated strapping and the dry iodoform dressing continued. The child was sent out of the hospital within three weeks.

On admission, the temperature was 100° F. and rose to

100·8° F. in the evening, after operation on May 3; it rose again on two or three subsequent occasions to 100° F. without obvious cause, but otherwise was scarcely raised above normal.

After removal, the nævus was cut into from its deeper surface and was found to contain about 1 oz. of blood-stained inodorous pus; the interior was rough, corrugated and divided into numerous loculi by strands of soft shreddy (pyogenic) tissue running across the cavity. This condition of the nævus cleared up some points in the clinical history of the case for which I could not account, viz. the rapid growth which was stated to have taken place during the preceding week or two, the pain experienced by the child, and the pyrexia. Though referred to by Holmes, Weinlechner, and other writers, this is the only case in which I have ever seen suppuration occur within a nævus. The latter writer states that suppuration and even gangrene may occur, and may result from injury, or set in after erysipelas, or may occur as an ordinary phlegmon. I subsequently made careful inquiries, but no history of injury could be obtained in this case.

## Remarks on the Treatment.

Although I only record this one case in detail, I may say that I have excised a large number of nævi, and from almost every region of the body, and now prefer this plan to any other for the mixed variety.

The methods of treatment at present in vogue may be summarised as follow: caustics, cauteries, subcutaneous ligature, injection of coagulants, electrolysis, and excision. The use of collodion, vaccination, pressure, and cold are hardly worthy our attention. Of these methods I consider excision as the most radical, the least painful, and the most certain.

For *cutaneous nævi*, there is no better application than fuming nitric acid. Freely applied with a glass brush and allowed to extend just beyond the margin of the growth, one application usually suffices to effect a cure. When not irritated, the necrosed portion gradually dries up, and forms a scab, beneath which complete cicatrisation may take place. More usually, however, and especially in delicate skins, the necrosed tissue is shed, leaving a granulating surface which quickly heals, and in the course of a few weeks or months becomes a white supple cicatrix. An application of fuming nitric acid is often sufficient also for nævi of the *mixed variety*, that is to say for those which are partly cutaneous and partly subcutaneous. The more the cutaneous predominates over the subcutaneous portion the greater the chance of success. The acid will be found useful to destroy the cutaneous portion of a nævus, when from any cause more radical measures are temporarily counter-indicated. In not a few of these cases the inflammatory process finds its way from the surface to the deeper parts, and leads to their obliteration by cicatricial ingrowth.

The application of weak acids is to be deprecated. They cause inflammation of the skin, but do not destroy the nævus; in this manner growth is rather promoted. The acid must be of the strongest kind; the so-called fuming commercial acid is best adapted for the purpose. The acid should be preserved in carefully closed bottles, as it weakens on exposure to the air, by absorption of moisture.

In cases, where *the subcutaneous* portion forms the sole or chief part of a nævus, something more penetrating than any caustic will be found necessary. One of the oldest measures is the actual cautery; it may be applied either in the form of needles, or in some grosser manner, and will doubtless prove efficacious. Fine platinum needles heated by galvanism, or Paquelin's thermo-cautery will be found very convenient if the cautery treatment be decided upon; in nævi of any size, several applications of the needles will be required.

Subcutaneous ligature I regard as a barbarous practice. On this account, as well as because of its uncertainty, and the long duration of the treatment, I have not practised the method for years past. I have likewise relinquished the plan of injecting nævi, as much on account of the fatal accidents which have been recorded to have followed this plan of treatment, as on account of the unsatisfactory results on the nævus itself. Some years ago I injected a large nævus situated in the middle of the upper lip, having first compressed the coronary vessels on the two sides to prevent the coagulating material from being carried into the circulation. No other harm followed than a monstrous slough, which finally left a gap not unlike a harelip and which had to be so treated.

The only other treatment besides excision yet to notice is electrolysis. Of this I would say that, when from position, size, or other circumstance excision of the nævus is contraindicated, electrolysis is the best plan to fall back upon. In cases of soft, semi-cavernous nævi, that is, in which the vessels are believed to be dilated into spaces, electrolysis may be very advantageously tried. Several platinum needles, according to the size of the nævus, attached to the positive pole, may be passed in, and the circuit completed by placing a sponge-covered rheophore on the surface somewhere near at hand. In the ordinary subcutaneous variety needles connected with both poles may be inserted (their points should not touch), five to ten or fifteen cells being used, according to circumstances, for ten or fifteen minutes; the current may be advantageously reversed once or twice during this time. As a rule more than one application is necessary, and sometimes the electrolysis may have to be repeated several times before the nævus is completely destroyed. In the mixed variety, instead of a sponge-covered rheophore, a platinum disc may be used to complete the current. By holding the disc, which should as far as possible correspond in size and shape with the (previously moistened) nævoid skin, closely applied, destruction of the skin can be effected. A dead white area of necrosed skin will result and in course of time slough out. The extent to which the skin should be destroyed requires careful regulation; the uncertainty of the battery, its better working on some days than others without appreciable cause, and the idiosyncracies of tissue in different individuals, must all be taken into account. It is advantageous to use a galvanometer, and then the strength of the current can be accurately measured. For nævi on the cheek or on the nose the needles can be introduced from within the mouth or the nostril, and thus all scar avoided.

## Excision of Nævus.

This is a very old plan of treatment. Save in a few exceptional cases and places, I believe it to be the most widely applicable of any of the methods of treatment to which reference has been made. When a nævus is quite subcutaneous and the superjacent skin normal, an incision should be made over the centre of the nævus, and the skin turned back as two flaps; but when the skin is involved it is better to remove it along with the deeper part by means of a long elliptical incision. In one case in which I tried the method advocated by Mr. Teale some years ago, of detaching the nævus from the affected skin, I had subsequently to destroy the superficial part of the nævus with nitric acid, for no sooner was the wound healed than the nævus began to spread on the surface. As a rule there is no difficulty in bringing the edges of the wound together after a considerable piece of skin has been removed. Even on the forehead, by detaching the skin and subcutaneous tissue from the pericranium, a considerable gap can be filled up without causing undue tension. It is desirable to put in the sutures very close together, in order to distribute tension as much as possible. Care must be taken to make the edges of the incision fit accurately, as if they curl inwards, primary union is not likely to ensue. I have occasionally made a linear incision parallel to, and at a short distance from, the main incision, with a view to relieve tension, and have found the plan answer well.

Notwithstanding, I have been disappointed in not securing primary union in some of the cases, and at first was much distressed at my want of success; but by keeping the edges of the incision as nearly together as possible by means of fenestrated strapping I have been astonished and pleased to see how small a scar ultimately results. This has led me latterly to remove deep nævi, even when from their position or shape or size I could scarcely expect primary union, and where indeed I did not attempt to secure it. In operating on a child with a circular nævus between the bridge of the nose and the eye, I found the wound could not be closed without puckering its edges; on this account, and because I feared displacement of the eyelid and the tear punctum, I allowed the wound to heal by granulation, which it speedily did, a hardly perceptible scar remaining.

Thus it will be seen that I advocate excision for subcutaneous and mixed nævi, not only because it is a radical cure, and because a mere linear cicatrix is the only sign that may be left even of a large nævus, but also on the ground that when primary union of the incised tissues is not obtained, a less unsightly scar remains than after almost any other treatment that can be adopted. Moreover, the duration and the subsequent after-treatment of the case are reduced to a minimum. After any other method of treatment, relapse is by no means infrequent; in some few cases I have seen a most inveterate tendency to relapse. This begins either by the appearance of a halo of delicate vessels, or as minute bright red points, generally near the margin of the scar.

It is thus possible that excision may even be called for in addition to other plans of treatment—another argument in favour of adopting it *ab initio*.

The scars occasionally become keloid, but in my experience this condition gradually disappears again. In the case of large and very white scars on the neck and shoulders of girls who may wish to wear low dresses, tattooing may be undertaken.

## Analysis of 564 Cases.

I have thought it might not be without interest to give a few general clinical details concerning this very common condition. During the past six or seven years not less than 564 cases of nævus have been treated among my out-patients at the East London Hospital for Children. Of these 172 (32·1 per cent.) were males; 365 (67·9 per cent.) females; and in 27 the sex is not stated. This preponderance of girls over boys, though not a new fact, is remarkable.

With very few exceptions, the nævi were stated to be congenital; in only eight or ten cases was it reliably stated that the nævus had appeared after birth. In many cases they appeared as mere "specks," growing more or less rapidly; sometimes they were quite large at birth; in a few instances they remained stationary, but growth and extension were the usual features. The nævi often appeared in the first instance as a group of minute specks, gradually coalescing into one large patch. I incline strongly to the belief that *nævi are always congenital*. They may not always occur as visible cutaneous nævi, but in the cases thought to be non-congenital it seems probable that a small subcutaneous nævus exists at birth, which gradually spreads to the skin, and becomes visible only when the child has attained some months or years of life.

Age of Patients when brought for treatment.

| | | | | |
|---|---|---|---|---|
| Under 3 months | 205 | 390 | | |
| „ 6 „ | 185 | | | |
| „ 9 „ | 72 | | | |
| „ 12 „ | 38 | | | |
| „ 2 years | 41 | | | |
| Between 2 and 15 years | 17 | —— | 3 years | 9 cases. |
| | | | 4 „ | 2 „ |
| | | | 5 „ | 3 „ |
| | | | 7 „ | 1 case. |
| | | | 11 „ | 1 „ |
| | | | 15 „ | 1 „ |
| Age not stated | 6=564 | | | |

Seat of the Nævus.—In ninety cases there were multiple nævi, the scalp being affected 40, and the face 31 times, beside other parts of the body. In one case there were 11 nævi, in one 7, in two 5, in many cases 3, while in the remainder there were 2 nævi. The nævi were not all of the same variety when multiple, all three varieties being occasionally present.

In 320 of the cases the nævus was situated on the :

| | | | |
|---|---|---|---|
| Scalp | 94 times. | | |
| Face | 95, viz. | Forehead | 32 |
| | | Ear | 13 |
| | | Nose | 7 |
| | | Cheek | 10, including 4 parotid nævi. |
| | | Eyelids | 6 |
| | | Lips | 10, including 4 on mucous membrane, and 1 sublingual. |
| | | Neck | 17=95. |
| Upper extremity | 18 | | |
| Lower ,, | 24 | | |
| Trunk | 96 | | |
| Genitals | 12, viz. | Labia | 9 cases. |
| | | Mons Veneris | 1 case. |
| | | Scrotum | 2 cases. |

—in the remaining cases the seat of the nævus is not stated in my notes.

VARIETIES.—Clinically, nævus can most appropriately be divided into :

*Cutaneous.*—Those affecting the skin only ;

*Subcutaneous.*—Those affecting the subcutaneous tissue only ; and

*Mixed.*—Those partaking more or less of the two former varieties, and in which one or other may predominate.

Of the 564 cases, the *cutaneous* variety formed about 15 per cent. of the whole ;

The purely *subcutaneous* about 4 per cent. ; and

The *mixed,* by far the larger majority, with the exception of a few unusual and irregular forms, constituted the remainder.

The irregular cases include the case related at the commencement of this paper (suppuration within the sac) ; four cases undergoing cystic degeneration ; two cases which consisted partly of fat, and partly of nævus tissue, and some cases, in which there was more or less pigment besides nævus (nævoid moles).

Many cases of so-called "port-wine" mark have come under observation, but I have not included these in my paper, as I have no new observations to offer thereon. In young infants at birth it is not at all unusual to see slight degrees of staining, due to some abnormal condition of the blood-vessels; but this staining for the most part disappears spontaneously during the early months of life.

COLOUR.—Among the foregoing, all shades from bright scarlet to plum colour, were observed. Sometimes the surface was dull, sometimes quite shiny; sometimes the nævus was quite flat, sometimes considerably raised and papillated. I have seen some with overhanging margins, somewhat mushroom like. They are often covered with hairs, even when situated on parts not usually hairy; the hairs are then coarse and hypertrophied. The orifices of the skin glands, usually coarse and hypertrophied, can often be seen on the surface of these nævi.

SPONTANEOUS ULCERATION.—In nineteen of the cases, spontaneous ulceration was going on when first seen, while in many others it was evident that a similar ulceration had taken place, from the presence of cicatrix on the surface of the nævus, not brought about by treatment. It would thus appear that spontaneous ulceration is by no means a rare condition; it is remarkable how seldom hæmorrhage occurs under these circumstances. In one case only have I seen any considerable amount, and this occurred in a child with a well-marked hæmorrhagic diathesis.

SPONTANEOUS CURE.—Though mentioned in text-books, I have not myself met with any cases of spontaneous cure. After destruction, by caustics, of the cutaneous portion, the subcutaneous part may cease to spread; doubtless the inflammatory process finds its way into the deeper structures and helps to obliterate the vessels. I should not advise leaving a nævus on any prominent position untreated in the hope that a spontaneous cure might set in; the more probable result would be a great increase in its size.

HEREDITY, and FAMILY PREDISPOSITION.—In a certain number of cases, a distinctly hereditary history was obtained. I have not, however, made inquiries on this score in the majority of my patients, and the details are therefore very incomplete. In many of the cases I found that other children in the same family were the subjects of nævus. Nor have I found any causes predisposing to the development of nævus. In only one case, have I recorded a hæmorrhagic diathesis as present. SYPHILIS was not present in an undue proportion of the children. RICKETS, on the other hand, was present in a considerable number of cases, not as a cause, but as a coincidence due to the fact that so many children show signs of rickets at the ages when these cases came under observation.

In this association, the presence of CRANIOTABES, which, in my opinion, is essentially a manifestation of rickets in infancy, in a considerable number of cases is very interesting and remarkable. In 157 cases in which the condition was looked for, craniotabes was present in 56 cases (35 per cent.), viz. males 21, females 35. Of these, 24 children were under three months of age; 28 were between three and six months of age, and 4 between six and nine months of age.

THE ANATOMICAL CHARACTERS OF NÆVUS.—Though nævi vary much according to their age and position they nevertheless present certain pretty constant features. Old and stationary nævi are sometimes found to be undergoing cystic degeneration; others to be slowly disappearing, owing to the ingrowth of connective tissue. When removed from young infants, and especially such as are increasing in size, nævi will be found to consist most frequently of hypertrophied arterioles situated among such other structures as are common to the locality. Thus, on the scalp and about the face, which are both *seats of election*, the nævus growth will be found among and surrounding the hair-follicles, the sebaceous and sweat-glands. In a minority of cases the nævoid vessels appear to be chiefly venous. It would therefore appear that nævus is essentially some congenital pathological condition of the capillary plexuses which normally surround the appendages of the skin, especially the hair-follicles, or of the vascular loops found in the papillæ of the true skin.

When a growing nævus of any size is examined the exact starting-point cannot be made out; but from the fact that all the adjacent structures are hypertrophied—hairs and their follicles, sweat-glands, sebaceous glands, &c.—it would seem probable that the morbid tendency commenced long before birth. Clinically a distinction between arterial and venous nævi cannot be established with accuracy. I have found the arterial variety much more common microscopically; in one instance in which, during life, the nævus had been of a dusky bluish-red colour, and therefore presumably venous, the microscope discovered the growth to consist of the typically thick-walled arteries, which Virchow says may be so easily mistaken for gland-ducts.

The nævi examined were continuous with the skin and subcutaneous tissue, but separated from the deep fascia by a delicate capsule, and readily peeled off; in a few cases, however, the growth has been found to have invaded the muscle and its investing fascia. When this has occurred, it has been along the course of the chief nutrient vessels; for in nearly all cases one or more large nutrient vessels have been found entering the nævus, generally from the deep surface. In very small and early cases the cutaneous variety was found to be situated between the epidermis and the true skin, in its subsequent growth the one and the other becoming more and more implicated. In such cases the growth doubtless commences in the vascular loops of the papillæ.

Whether of the venous or arterial variety the vessels are more or less loosely packed. When from hindrance to expansion from local causes, or if the capsule containing the nævoid vessels becomes too full and too tense as growth goes on, some mutual pressure on the vessels may take place, and their obliteration, with subsequent atrophy of the nævus, result. Cure may also slowly result from the ingrowth of granulation tissue after irritation from any cause, sometimes from mere friction of the clothes, abrasions, &c. After the application of strong caustics, of the actual cautery, or of the electrolytic needles, cure also results in this way, that is to say, by the ingrowth of granulation tissue and the subsequent cicatrisation which follows. In a few cases, doubtless by the use of needles, the main nutrient vessels of the nævus have been obliterated, and a cure has resulted after one application; in a majority of cases, however, cure has been much slower and brought about, as just described, by ingrowth of granulation tissue.

The following microscopic appearances were found in a bright red cutaneo-subcutaneous (mixed) nævus removed from the forehead of a young child; it was distinctly lobulated, and presented a delicate capsule on its deep surface. In horizontal section (for studying, more convenient than vertical sections) the skin was found much hypertrophied, as also the appendages. The nævoid structure was enclosed in small fibrous alveoli, which also generally included a hair-follicle and its sebaceous gland (sometimes more than one) besides the network, more or less closely packed, of tortuous thick-walled arterioles. These vessels twisted about in a very irregular manner; the lumen of the vessels was therefore seen in a variety of cross sections, more or less oblique, the exact course of any one vessel being very difficult to trace. They do not present the appearance of an ordinary capillary, being thicker and coarser in all ways. Virchow, in describing them, says, " These vessels are almost never ordinary simple capillaries, but for the most part canals with very thick, even double, walls, so that one may be in doubt as to what to call them. It has been already stated that they are hypertrophied, or, more exactly, hyperplastic capillaries, or at least vessels which take the place of capillaries. . . . . On the one hand many of these capillaries resemble veins, others arteries, at least so far as the position of the nuclei in the outer coats is sometimes longitudinal and sometimes transverse. Generally there are several layers of cells, giving the impression of continuous growth." Here and there, in sections near the surface, touch corpuscles can be seen in abundance, large and hypertrophied; elsewhere the erectores pilorum stand out in contrast with the nævoid arterioles and the hair-follicles. The fibrous alveoli vary much in thickness; sometimes they are very fine and delicate.

Instead of the thick-walled arterioles just mentioned, larger and thinner-walled vessels are sometimes found, presumably venous in nature, but, like the arteries, not presenting their ordinary histological characters.

Growth of nævus occurs in at least two ways; it may spread on the surface only, or it may extend both on the surface and subcutaneously as well. Extension seems to be due to a budding-out of the nævoid vessels, probably from having less than their normal support, and from being especially prone to this disease. The "buds" first appear as solid outgrowths from the vessel wall, then elongate and finally coalesce with others; they subsequently become hollowed out, and so the circulation is established.

Extension into the deep connective tissue takes place in a manner not very different from that in which carcinoma spreads. " A small-cell infiltration makes its way between and among the meshes of the connective tissue, which it closely follows" (Billroth). In a nævus, granulation cells invade the capsules of the fat cells in gradually increasing numbers; the septa thus become greatly thickened, and finally they become pervious and converted into blood-vessels; the fat gradually disappears as the granulation tissue becomes more abundant and organised.